

**Notice of Allowability**

Application No.

10/642,797

Examiner

Peter-Anthony Pappas

Applicant(s)

BUYANOVSKIY, GEORGIY

Art Unit

2628

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/18/07.
2. ☒ The allowed claim(s) is/are 21-26, 28-46 and 48-60.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

***Allowable Subject Matter***

1. Claims 21-26, 28-46 and 48-60 are allowed.
2. In regard to claims 21-26, 28, 29, 40-46, 48, 49 and 60 the cited prior art of record fails to teach or suggest the respective claim language when considered as a whole, specifically subdividing the 2D image plane into a plurality of sub-planes; for each of the plurality of sub-planes, casting four rays from the four corners of the sub-plane and estimating a pixel value at each corner; calculating a maximum pixel value variation within the sub-plane; and recursively subdividing the sub-plane into multiple child sub-planes of smaller sizes by casting a ray from the center of the sub-plane until the maximum pixel value variation of the sub-plane is below a predefined imaging error threshold.
3. In regard to claims 30-32 and 50-52 the cited prior art of record fails to teach or suggest the respective claim language when considered as a whole, specifically identifying a largest sub-volume along the ray path and its corresponding maximum and minimum data values; checking if the opacity transfer function varies monotonically between the maximum and minimum scalar field values; if the function does not vary monotonically, recursively identifying a smaller sub-volume along the ray path and its corresponding maximum and minimum data values; and checking if the opacity transfer function varies monotonically between the maximum and minimum scalar field values of the smaller sub-volume; and if the function does vary monotonically, calculating the amount of ray energy reflected by the sub-volume during its interaction with the ray.

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4. In regard to claims 33-39 and 53-59 the cited prior art of record fails to teach or suggest the respective claim language when considered as a whole, specifically estimating a maximum energy differential of the sub-volume; comparing the maximum energy differential against a predefined energy error threshold; if the maximum energy differential is above the predefined energy error threshold, recursively; selecting a smaller sub-volume along the ray path; and estimating a new maximum energy differential of the smaller sub-volume; and if the maximum energy differential is below the predefined energy error threshold, calculating the amount of ray energy reflected by the sub-volume using the illumination model.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter-Anthony Pappas whose telephone number is 571-272-7646. The examiner can normally be reached on M-F 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Peter-Anthony Pappas  
Examiner  
Art Unit 2628

PP

  
ULKA CHAUHAN  
SUPERVISORY PATENT EXAMINER